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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/648,895 | 08/25/2000 | Thomas J. Quigley | 33837/LTR/B600 | 6989 |

7590 05/06/2004
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EXAMINER

BOAKYE, ALEXANDER O

ART UNIT PAPER NUMBER

2667

DATE MAILED: 05/06/2004

[Handwritten number 9]

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/648,895

Applicant(s)

QUIGLEY ET AL.

Examiner

Alexander Boakye

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-27 is/are allowed.
- 6) ☒ Claim(s) 28,29 and 51-56 is/are rejected.
- 7) ☒ Claim(s) 30-50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3 and 4.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 56 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 56 (line 5), the limitation "sampling the data representative signal" has been repeated in line 7. How can sampling the data representative signal be sampled again after filtering. Correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 28, is rejected under 35 U.S.C. 103(a) as being unpatentable over Paff et al. (US Patent # 5,553,064) in view of Becker et al. (US Patent # 5,612,975).

Regarding claim 28, Paff discloses a receiver (see Fig. 4) that receives a signal transmitted through a cable transmission system (column 2, lines 27-29), comprising: an analog to digital converter (column 3, lines 44-49); a matched filter (column 3, lines 62-64) coupled to the analog to digital converter (column 3, lines 44-49). Paff differs from

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the claimed invention in that Paff does not teach the claimed closed loop resampler coupled to the matched filter. However, Becker discloses closed loop resampler coupled to the matched filter (column 6, lines 62-66). One of ordinary skill in the art would have been motivated to incorporate a closed loop resampler coupled to the matched filter into the communication network of Paff in order to resample at appropriate Nyquist rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate resampler coupled to the matched filter such as the one taught by Becker into the communication network of Paff with the motivation being that it provides capability for the system to resample at appropriate Nyquist rate, thus enhancing performance.

3. Claims 51-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paff et al. (US Patent # 5,553,064) in view of Kim(US Patent # 5,859,671).

Regarding claim 51, Paff teaches a method for recovering data symbols transmitted over a cable system (column 2, lines 27-29; column 3, lines 44-46), the method comprising the steps of: recovering from the cable system a data representative signal having symbols occurring at a given symbol rate (column 3, lines 44-46); sampling the signal at the given symbol rate (column 3, lines 44-49 ; the claimed given symbol rate reads on sampled at 8x symbol rate indicated at Fig. 4). Paff differs from the claimed invention in that Paff does not disclose the step of adjusting the phase of a symbol clock to match the symbols of the signal. However, Kim discloses symbol timing recovery circuit of Fig. 1, normally used by one skilled in the art, in cable modem network, having the step of adjusting the phase of a symbol clock to match the

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symbols of the signal(column 2, lines 21-35; column 2, lines 45-48). One of ordinary skill in the art would have been motivated to incorporate the step of adjusting the phase of a symbol clock to match the symbols of the signal into the communication network of Paff in order to reduce the cross correlation between the two symbol streams to zero. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate adjusting the phase of a symbol clock to match the symbols of the signal such as the one taught by Schnerk into the communication network of Paff with the motivation being that it provides capability for the system, thereby synchronizing the sampling with the symbols in the symbol streams.

Regarding claim 52, Paff teaches the step of converting the recovered signal to digital form before the sampling step (column 3, lines 44-49).

Regarding claim 53, Paff teaches the step of down-converting the recovered signal before the sampling step (column 4, lines 29-33).

Regarding claim 54, Paff teaches filtering the data representative signal (column 4, lines 29-32).

Regarding claim 55, Paff teaches re sampling the data representative signal (see 102 Fig. 4; the claimed re sampling the data representative signal reads on sampled at 8x symbol rate).

4. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paff et al. (US Patent # 5,553,064) in view of Emelko (US Patent # 5,903,231).

Regarding claim 56, Paff teaches a method for recovering data symbols transmitted over a cable system (column 2, lines 27-29; column 3, lines 44-46) the

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method comprising: converting a transmitted data representative analog signal into a data representative digital signal (column 3, lines 44-49); sampling the data representative digital signal (column 3, lines 44-49); filtering the data representative digital signal with matched filter (column 3, lines 56-64); sampling the data representative digital signal (the claimed sampling the data representative digital signal reads on sampled at 8x symbol rate; see 102 Fig. 4). Paff differs from the claimed invention in that Paff fails to disclose converting the data representative digital signal into one of the plurality of voltage levels. However, Emelko discloses converting the data representative digital signal into one of the plurality of voltage levels (lines 1-2 of the abstract). One of ordinary skill in the art would have been motivated to incorporate converting the data representative digital signal into one of the plurality of voltage levels into the communication network of Paff in order to increase data transfer rate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate converting the data representative digital signal into one of the plurality of voltage levels such as the one taught by Emelko into the communication network of Paff with the motivation being that it provides capability for the system to conserve bandwidth, thus enhancing efficiency.

5. Claim 29, is rejected under 35 U.S.C. 103(a) as being unpatentable over Paff et al. (US Patent # 5,553,064) in view of Becker et al. (US Patent # 5,612,975) and further in view of Critchlow (US Patent # 5,276,706).

Regarding claim 29, the combination of Paff and Becker discloses a burst receiver (column 3, lines 44-46 of Paff). The combination of Paff and Becker does not

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teach a matched filter coupled to the analog to digital converter by a frequency down-converter. However, Critchlow teaches a matched filter coupled to the analog to digital converter by a frequency down-converter (column 5, lines 17-26; see Fig. 1). One of ordinary skill in the art would have been motivated to incorporate a matched filter coupled to analog to digital converter by a frequency down-converter in order to filter out the response. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a matched filter coupled to the analog to digital converter by a frequency down-converter such as the one taught by Critchlow into the communication network of Paff and Becker with the motivation being that it provides capability for the system to filter the response and reduce any noise effect.

Allowable Subject Matter

6. Claims 30-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-27 are allowable.

The following is a statement of reasons for the indication of allowable subject matter: Claims 1-27 are allowable because the prior art of record does not teach an open loop resampler in the signal path for sampling the data representative signal at the given symbol rate; and a closed loop resampler in the signal path for adjusting the phase of the symbol clock to match the data representative signal.

Conclusion

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Boakye whose telephone number is (703) 308-9554. The examiner can normally be reached on M-F from 8:30am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham, can be reached on (703) 305-4378. The fax number is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 305-4750.

Alexander Boakye

Patent Examiner

AB

4/26/04



CHI PHAM

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5/3/04